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their speech, and their words abound in the letters *n* and *e*, as in *nane-mane*, *naho*, &c.—peculiarities in which we are surprised to find a resemblance among tribes geographically so distant, and possessing no written character. These tribes have both also the spread in the foot, or duck's foot, as we used to call it in the Pomeroun, *i. e.* their feet and toes are spread out in the manner most suitable for walking on the muddy shores and marshes which they inhabit."]

II.—*Extract from a Private Letter addressed to Captain Sabine, R.A., F.R.S., by Mr. David Douglas, F.L.S. Dated Woahoo (Sandwich Islands), 3d of May, 1834.*

I ARRIVED in Byron's Bay on the 2d of January of the present year, and took up my abode with the Rev. James Goodrich, an American missionary, from whom I have received great kindness. I have since made successive journeys to the summits of the mountains and volcanoes—my first being to Mowna Kaah, my second to Kiraueah, and my third to Mowna Roa. I shall give you a short account of each.

1. Mowna Kaah, or the White Mountain, ascends gently at first, being skirted, near Byron's Bay (in lat. 19° 44' N.), and itself by much the most beautiful and fertile district in this group, by a belt of about four miles breadth, chiefly cultivated, and in which may be seen the bread-fruit (*Artocarpus incisa*), banana, sugar-cane, taro (*Arum esculentum*), and other plants used in the domestic economy of the islanders, in great profusion and luxuriance. This region terminates 1500 feet above the level of the sea; then commences a densely-wooded country, principally covered with several species of acacias, which attain a great size, and of which the native canoes are made. The underwood and brush is tree-fern, from four to forty feet high, and clothed to the top with an almost endless variety of other ferns. This region extends to 8700 feet above the sea, and being either bathed in fog or refreshed with daily showers, nothing can possibly be more cheering to the eye than to see in it immense feathery fronds of ferns decorating the indescribably rugged lava, which, from time immemorial, has been vomited down the flanks of these extraordinary mountains. A small path led through this wood, but in consequence of the late rains it was very bad, and the creeks were high and dangerous to cross. The upper edge of the wood does not terminate gradually, with a decrease in the number, or diminution in the size of, the trees, as is generally the case, but is cut off abruptly, the timber on the very summit being as large as in any part of the section. The slope of this region is also gradual, the travelling distance to its extremity being twenty-

seven miles. This afforded me a splendid collection of plants, chiefly ferns.

From this point to the height of 12,000 feet, the flanks of the mountain are broken into deep chasms, ravines, and numerous small extinct craters. I did not find a link of cryptogamous plants between the gramineous region and that where verdure ceases, as on the mountains of America and Europe; on the contrary, a small species of *vaccinium*, a singular plant belonging to the great order of *compositæ*, and a small alpine *juncus*, were the last traces of vegetation that I observed. The whole mountain is here of volcanic origin, differing in compactness, form, and colour, having no trace of primitive formation, or vestige of organic remains; and 12,700 feet high, a vast elevated table-land, or plain, is spread out, covered with sand, gravel, and stones, with scorïæ and ashes, to the depth of several feet; above which rise eleven peaks or humps, on the most elevated of which, a ridge of 221 yards in length, I placed my instruments, near a cairn of lava, formed, I judge from the decayed state of the lava, many years ago. My apparatus consisted of a reflecting circle, a large instrument for determining the dip of the magnetic needle, apparatus for intensity, a mountain barometer, hygrometers, thermometers, &c. I refer you for particulars to the accompanying register of observations; and as the weather was clear, and all care was taken, I am persuaded that they merit confidence. The wind was violent, but very steady, S. 75° W.; and through the kindness of Mr. Goodrich I was enabled to have simultaneous observations taken at his house.

The slope of the highest ridge is 52° . The south and east part is composed of ashes, which makes it very laborious to ascend; the north end is less steep, and the footing is surer on the large blocks of lava. All the peaks may be ascended, excepting one, which has a slope of 73° , and an elevation above the plain of 700 feet. At the foot of Station Peak, 1100 feet from the extreme summit, there was a conflicting commotion in the clouds, layers of air moving in every direction, and the wind ascending in whirls. This altitude appeared to be the greatest where the north-east trade-wind is felt. The thermometer, at 4 P.M., stood at it at 39° ; dew point, 14° . In ascending the mountain, we found the hygrometer sink very regularly with the thermometer, to the height of 11,000 feet, and then it fell rapidly. The immense difference at the summit instantly caught my attention; and fearful lest the ether might have been applied too copiously to the ball, I repeated the experiment five times, with always the same result. So delicate was the dew-ring seen, that it appeared like an exceedingly fine grey silk thread; yet the moment of its appearance was readily perceived, and it continued thus visible from 4' to 4' 4". The

instant of its disappearance, the mercury in the internal thermometer rose, as by a jet, from 3° to $3^{\circ} 5'$, and then gradually descended to within 2° of the external one. A very delicate thermometer, by Newnian, which was compared at the Royal Observatory, and also at the Royal Society, and found to have no index error, when placed in a perforated tin cylinder, and suspended four feet from the ground, stood at 32° ; while another, which in like circumstances invariably corresponded with this, when exposed naked in the shade to the wind, stood at $32^{\circ} 5'$. In a beautiful horizon of mercury without a roof, by a very satisfactory observation of the sun's meridian altitude, taken with a sextant having an index error of $+ 0' 4''$, the latitude was found to be (employing Young's refraction) $19^{\circ} 49' 58''$ N.; and by a series of observations taken before and after noon, with a reflecting circle $19^{\circ} 50' 3''$ N.: mean, $19^{\circ} 50'$ N. It is of great importance to know the exact position of the culminating points in these islands: the longitude I cannot deduce, for want of an almanac.

This extraordinary mountain does not reach the limit of perpetual snow, though snow, even to deepness, is occasionally seen in July and August. On the 12th of January this year, there was no covering of snow, and only a little lay here and there, on the northern blocks of lava on the extreme summit of the mountain. The total absence of verdure for about two thousand feet, the heating material of the lava, its insular position in the midst of the ocean, and its being acted on almost constantly by atmospheric currents, all probably raise the snow line; and perhaps the mean temperature may be at present further raised by the volcanic agency which is ravaging the whole island.

Sound is but very slightly diminished at the summit of Mowna Kaah, owing, undoubtedly, to the absence of snow. On the mountains of North America, at a much less elevation, where snow is abundant, the firing of a gun is not heard at a short distance even by the timid antelope or mountain sheep, especially if snow is actually falling.

2. The volcano of Kiraueah, differing from the forms usually attributed to volcanoes, viz., cone-shaped mountains with terminal orifices, is a vast sunken pit, of a nearly oval but somewhat irregular shape, with almost perpendicular sides; and from time immemorial has been prodigiously active, though it has not, within the memory of man, been known to overflow, excepting in the year 1787, three years previous to Vancouver's first visit to these islands, when a very dreadful eruption took place, and lasted seven days and nights. I have this information from the last of the Priests of Peli (the Goddess of the Volcano), who witnessed the scene, and saw, as he says, 5405 of his countrymen, the war party of Keoua, the cousin and great rival of Tamehameha, all perish

in consequence of their imprudently endeavouring to pass on the south-west side, while the red-hot material was carried in that direction by a strong trade-wind. This person afterwards assisted, also, in removing the remains of the dead to the fire into which they were thrown.

The height of Kiraueah above the level of the sea has been greatly over-rated at 10,000 feet: it is only 3873 feet. The depth of its sides, down to the first black ledge or plain within it, barometrically ascertained, is 715 feet; and to the lower black ledge 1058 feet by one observation, and 1096 by another;—in all these cases employing a reading before starting and another on returning, in lieu of a simultaneous observation, (and neglecting any correction for diurnal fluctuation of the mercurial column, for determining which, or the precise time of its occurrence, I have not a sufficient amount of materials.) The mean of these barometrical measurements differs but slightly from others which I made geometrically, and which gave 998·10 feet. From the lower ledge to the surface of the volcanic lakes, the depth, as near as I could judge, was 43 feet; which, added to the mean of the previous measurements, makes this awful place 1120 feet deep on the west, the highest side, and 1062 where my tent stood, at the north-west end. The latitude of this tent, by one meridian altitude of the sun, two passages of Sirius, and one of Canopus, is $19^{\circ} 25' 42''$ N.

At the bottom two lakes of liquid lava first arrest the attention. When the wind blows strong, one may approach to within a few feet of the edge of the smaller one, which is a nearly circular basin, of 319 yards diameter, situated at the north, or wide end of the crater; but the heat was so intense it was impossible to reach the brink of the larger, which is situated near the south-west extremity, and, as near as could be determined, 1190 yards long, of a heart shape, and a breadth between the lobes of about 700 yards. The black ledge, however, from which these are viewed, is otherwise a sight which fills the mind of the beholder with awe. A space of five miles square, recently in a state of igneous fusion, in the process of cooling has been broken up into immense ledges and rolled masses, like the breaking up of a great river of ice; and these are of every shape and form, from gigantic rolls, like enormous cables, to the finest threads, like human hair, which are carried by the wind for the distance of miles round this terrific laboratory. Numerous chimneys, also, of various forms and sizes, are dispersed over the second, or lower, ledge; some of which emit slag, scorix, smoke, or steam, while others are comparatively tranquil. There were three cones or bluffs, which I observed in particular, of from 20 to 25 feet height, and about 120 yards breadth at the base, with lateral doors, like those of a baker's

oven, which, indeed, they otherwise closely resembled : and into these, by kneeling on the ledge, it is possible to peep, and witness a terrific vacuity, a red-hot atmosphere, while the volcanic agency is at the same time discharging by a terminal vent-hole. Both lakes of lava have a steady southerly current, the force of which I was enabled to determine accurately by throwing blocks of lava on the lake, and noting the time they took to pass 100 yards : it is at the rate of three miles and nearly a quarter per hour. The south end of both lakes presents thus one of the most magnificent spectacles in nature—a vast caldron of lava in furious ebullition, sometimes spouting up to the height of 20 to 70 feet, rolling and tumbling in fiery waves, hurrying along, and finally precipitated down an elliptical fiery arch (that of the north, or smaller, lake having a span of 142 yards, with a maximum height of about 43 feet). In this awful arch the force of the lava is in a degree arrested by the escaping of the gases, or volcanic forces, and large blocks are thrown back, and literally spun into the filamentous glass already noticed, which is carried by the wind, like the refuse of a flax-mill, all round the volcano. The sound issuing at the same time from the archway can hardly be spoken of ;—that of the whole steam-engines in the world would be a whisper to it.

The southern, or great lake is otherwise truly sublime. It is not constantly boiling, for at times it appeared quiescent, with serpentine fiery streaks on the surface, while at others the lava was thrown to a fearful height. Shortly after the numerous vent-holes discharged their steam or slag, the lake for a short time became tranquil ; and this continued to be the case during seven days and nights, the period of my stay.

To the east of this crater, at the distance of 370 yards, there is a very perfect circular one of much smaller dimensions, which has enjoyed, within itself, a long repose, for on the same level with its black ledge are found living trees with 120 concentric rings, or annual layers of timber. In June, 1832, on the neck between the two volcanoes, and on the exact spot where Lord Byron pitched a temporary house when he visited Kiraueah (called by him the Volcano of Peli) in 1825, the ground opened and discharged liquid lava, for the period of three days, into both volcanoes, which considerably filled them up. This was preceded by slight earthquakes ; and all verdure touched by the lava, as may be supposed, perished,—excepting the ferns, which, after a lapse of nineteen months, rose strong through the fissures, from one to ten feet deep, and have sent forth luxuriant fronds, as though nothing had happened to them, much less that they had been deluged with fire.

A night view at Kiraueah is indescribably grand ; and never can I forget that in particular which I witnessed on the 23rd January.


The sun set in all the glory of a tropical sky behind the majestic dome of Mowna Roa, clothed in snow for 2000 feet from the summit; and as he crept behind the mountain the brilliancy and splendour of the volcano became more manifest. But when the nearly full moon rose in silvery brightness from the bosom of the ocean, and, as if this was insufficient, the splendour of Sirius and Canopus were added, the whole gave the heavenly vault an indescribable magnificence, especially when contrasted with the perpetual, lurid, electric-like cloud which overhung the volcano. I sat for hours and enjoyed the scene.

On the 24th of January the temperature, at noon, on the northern brink of Kiraueah was 66° , dew point 42° ; while on the black ledge at the same time the first stood at 89° , the latter at 41° , the wind fresh from the N.E. The same thermometer laid on the lava in the sun's rays showed 115° ; shaded, 112° ; and on the brink of the small lake 124° . The dew-point here could not be found in three trials, the scale of the internal thermometer being under that range; besides, the ether was boiling. At 5^h on the same day I returned to the outer edge of the black ledge, where a delicious cooling breeze was blowing from the N.E., and the thermometer stood at $78^{\circ} 5'$. Here the ether was readily expelled from the coloured bulb of the hygrometer, and the bottle of it usually employed for pouring on the ball was further cooled in a calabash of salt and water; yet when the instrument was carried to the brink of the caldron there was still no ring of condensation—air 113° . The dryness, in a word, was intense beyond description, and the heat overpowering. My very eye-lids felt scorched and dried up, to say nothing of the dreadful headaches which such exertion created.

The outlet of Kiraueah is at the sea, in lat. $19^{\circ} 11' 51''$ N., nearly in the same meridian as the volcano itself. The place is called in the native language Punahala, or "broken in:" in the course of fourteen miles of latitude many overflowsings have taken place; and in some of the deep chasms seventeen layers may be counted, between each of which there is a fringed matting of fern-bushes. The whole eastern point of Owhyhee from Kalanihala, or Heavenly village, through the district of Puna, is one entire sheet of lava from the volcano.

I next ascended Mowna Roa, and on the 29th of January succeeded in reaching the summit. My last sleeping station on the mountain was at the elevation of 10,724 feet, and the evening of the 28th gave me no view. I was above the region of fleecy clouds, which appeared like a country covered with snow, and the immense cloud which hung over the volcano rose like a tower in the centre. Sunset, however, gave a different aspect. The fleecy clouds changed their hue to a vapoury tint, and the cloud over

the volcano, from an intense silvery brightness which it always has in sunshine, deepened its colour, and gave out a splendid illumination. The thermometer fell to 17° ; and this to the feelings was intensely cold. The next morning the sun rose in great beauty, and I caught his upper limb the instant that it appeared on the horizon; yet ere his whole disc was visible, the lower limb was flattened and ragged. The place where I stood was the limit of vegetation: all above was an immense dome of lava entirely destitute of verdure. Its ascent was gradual; but no words can express to you the ruggedness of its surface. The blocks of which it is composed are in some places smooth and glassy; in others compact and heavy, like basalt; in others light and vascular: they are of all colours also, and now thrown up in great mounds or ridges, or carried away in deep sunken valleys, as though scattered by some mighty river. Not twenty yards of the whole ascent can be called uniform, and in every direction vent-holes, or mouths, are visible, varying in size, form, and height. The lava which here issued from them presents also a novel sight, from some streams having been pressed forward transversely thus))))) ;

while from others they are fluted longitudinally thus ; and sometimes from the same mouths both kinds seem to have issued. Some also form circular masses, others are infinitely varied, and quite beyond my powers of description.

Walking on the snow early in the morning was excellent, but after the sun was two hours up it became very laborious. The centre of the dome is very flat: I mean that it has a very slight convexity; for though the day was unusually clear, I did not see the sea from the centre. It furnishes a horizon of itself, an immense elevated table-land, rather than the top of a mountain. The highest part is on the north rim, on the east side of the great terminal crater. The barometer here stood, at $3^h 10^m$ apparent time, at 18.736 ; air and mercury alike $36^{\circ}.5$; dew-point $3^{\circ}.5$: the wind strong south-west. The observations were repeated four times with always the same result. The simultaneous observations taken at Byron's Bay by Mr. Goodrich will be seen in the table annexed; and I value them the more as our readings constantly agreed within a very few hundredths of an inch. The weather at the sea was clear, with a fresh N.E. trade breeze.

The latitude of the great crater is $19^{\circ} 27' 4''$ N., ascertained by a satisfactory meridian altitude of the sun. Much rain had fallen within the previous fourteen days to my visit, yet the snow was three to five feet deep on the summit. Mowna Kaah was also covered with snow at this time 1500 feet down; the dome

of Mowna Roa being a larger mass, the snow on it always descends lower than on the sister mountain.

Magnificent, as is certainly the great volcano of Kiraueah, on the flanks of Mowna Roa, yet the grand terminal crater at its summit is not unworthy of competing with it. It is one of, if not the very largest, though not the most active, in the world. The circumference of the present crater, as nearly as my circumstances would allow me to determine it, is about six miles and a quarter; and the line of the ancient and now extinct orifice is not less than twenty-four miles round. From the summit to the black ledge in the present crater is 1270 feet, and it appears to have filled up considerably; the black ledge is vitrified lava, like that of Kiraueah. The northern part appears to have very recently undergone violent action, not by lava boiling up, but by throwing out immense stones and scorix in prodigious heaps, presenting a scene of singular devastation. In the bottom of this part of the volcano immensely deep chasms are also seen, as though the mountain were cleft asunder by them: no bottom could be seen in them, nor could any sound be heard when blocks of lava were thrown down—probably owing, in some degree, to an incessant whizzing noise which issues from them.

The southern part of the crater has obviously been the outlet to the lava, many successive layers of this, varying in form, colour, specific gravity, &c., being here visible; but it seems to have enjoyed a long state of repose. It is probable that the volcano might be entered on this side. I made the attempt, but the numerous chasms concealed by the snow, and my want of a companion, on whose experience and readiness I could rely, obliged me to desist. I may probably succeed another time; meanwhile I have even now a most magnificent collection of lava specimens, showing the successive formations from the sea to the summit, besides a princely collection of plants, to show the verdure at different heights.

I remained one night at the top of the mountain, and suffered much from cold, though the thermometer only fell to 17° ; also from hunger and thirst—all my guides, except one, having either refused to accompany me thus far, or deserted me in the course of the afternoon. The dip of the magnetic needle at Byron's Bay, lat. $19^{\circ} 43' 42''$ N., is $45^{\circ} 2' 0''$; at the elevation of 11,000 feet, in lat. $19^{\circ} 49' \text{ N.}$, it is $45^{\circ} 0' 5''$; and on the summit of Mowna Kaah, at 13,851 feet, in lat. $19^{\circ} 50' 1'' \text{ N.}$, it is $45^{\circ} 0' 0''$. The intensity and variation I have also found, by many observations, consistently the same at all elevations. One thing, however, ought to be remarked, which I observed especially at Kiraueah; viz., that the dipping needle and suspension bars for intensity

were, from time to time, most powerfully affected—not by coming to rest sooner, or by expressing a degree different from what might have been expected had no disturbing cause existed, but by irregular, jerking, twitching motions; the dip, for example, being sometimes 17° , 20° , 80° , and once 10° . The disturbing cause was therefore not permanent, but very variable; and did not arise from the accidental presence of any mineral substance, but from a *sympathy between the magnetical action and that going on in the crater of the volcano.*

In like manner, previous to and during earthquakes, I have observed a manifest disturbance in the action of the suspended bar. For example, on the 19th of February, at Byron's Bay, as is my usual practice when time permits, I was making a series of observations for the purpose of ascertaining if any diurnal fluctuation exists in the magnetical action, as in that of the barometer, when suddenly I found my observations quite irregular. The barometer stood at $30\cdot042$; thermometer, in the air, $78^{\circ} 5'$; and hygrometer, $76\cdot0$. A dead calm prevailed; the sky was slightly overcast by thinly-diffused clouds of a vapoury smoke tinge; near the horizon the vault, towards 2 P.M., became extremely red, fully equal to the splendour of a setting sun in autumn in England; everything, in a word, looked threatening. At $4^h 45^m 2^s$, apparent time, we accordingly experienced a dreadful earthquake, which lasted thirteen seconds; and as you may inquire how I took the time exactly, I may mention, that for the space of $2' 42''$ before the shock, its precursors were distinctly felt—first, a subterraneous howling noise, which gradually increased, and then an awful detonation, which was instantly succeeded by the shock, in strong undulations, not a heaving up, from south to north. The number of undulations was great, for the thirteen seconds appeared incredibly long; and a rustling of the leaves of the trees, though calm, and in the thatch of the adjoining houses, accompanied the noise. The sea receded about a mile, for a few minutes; and a part of the volcano fell in. The ground continued to be thus slightly, but sensibly, agitated during the whole night; and Mr. Goodrich's house, of wood, rolled like a ship in a storm, but did not fall. The shock was extremely local, and was not felt at all at forty miles distant on the opposite side; while others, much milder, have been universally felt. The magnetic bar continued greatly agitated through the whole period; but on the ensuing day, the 20th, I obtained consistent observations as usual, alike of dip, variation, and intensity.

This brings to my mind, also, a circumstance connected with the action of aurora borealis on the magnetic bar. On the 11th of May, 1833, in lat. $52^{\circ} 33' 46''$ N., long. $122^{\circ} 31' 33''$ W., this phenomenon occurred with singular beauty and strength for the

latitude and season of the year; and the bar continued affected the whole night, exactly as I have seen it since in the volcano of Kiraueah.

It is my intention to sail for England by the first opportunity; but as this is not likely to occur till August or September, I shall continue to labour at these islands to the best of my ability.

*Barometrical Measurement of Mowna Kaah, Owhyhee—January
12th, 1834.*

Lower Station—Barom. 29·910; Merc. 71·0°; Dew-Point 69·0°; Air 71·0°
Upper Station— „ 18·354; „ 32·7; „ 0·5; „ 32·7

Lower Station—Barometer	29·910	Upper Station	18·354
Index error	+ 0·052	. . . . .	0·000
Capillary action	+ 0·063	. . . . .	+ 0·063
Capacity of cistern	+ 0·013	. . . . .	— 0·165
Reduction of mer- cury to temp. 32° }	— 0·098	0·000

True height of the columns of mercury at 32° Fahr. }	29·940	18·252
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The difference in height of the two stations, computed by Problem XVI. of Mr. Francis Baily's Astronomical Tables and Formulæ, and employing the Table p. 183 of that work, is	Engl. feet. 13,558
And computed by the rule given in page 183 of Mr. Daniell's Meteorological Essays, second edition, in which a correction is introduced for the hygro- metric state of the atmosphere, the difference is	13,500
Whence, Height of the lower station above the sea	83
Barometer below the summit of the mountain at the upper station	4
Difference in the height of the stations, by Mr. Baily's method	13,558
Height of Mowna Kaah, by Mr. Baily's method	13,645
Ditto by Mr. Daniell's method	13,587

*Barometrical Measurement of Mowna Roa, Owhyhee—January
29th, 1834.*

Lower Station—Barom. 29·920; Merc. 79·0°; Dew-Point 76·0°; Air 79·0°
Upper Station— „ 18·736 „ 36·5 „ 03·5 „ 36·5

Lower Station—Barometer	29·920	Upper Station	18·736
Index error	+ 0·052	. . . . .	0·000
Capillary action	+ 0·063	. . . . .	+ 0·063
Capacity of cistern	+ 0·014	. . . . .	— 0·159
Reduction of mer- cury to temp. 32° }	— 0·111	— 0·001

True height of the columns of mercury at 32° Fahr. }	29·938	18·639
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	Engl. feet.
The difference in height of the two stations, computed by Problem XVI. of Mr. Francis Baily's Astronomical Tables and Formulæ, and employing the Table page 183 of that work, is	13,147
And, by Mr. Daniell's method, in which is introduced a correction for the hygrometric state of the atmosphere, the difference is	13,092
Whence,	
Height above the sea of the lower station	83
Difference of stations, by Mr. Baily's method	13,147
Height of Mowna Roa, by Mr. Baily's method	13,230
Ditto by Mr. Daniell's method	13,175

Barometrical Measurement of the Height of the Volcano of Kiraueah, in Owhyhee—January, 1834.

Lower Station—Barom. 29·940; Merc. 75·0°; Dew-Point 69·0°; Air 75·0°	
Upper Station— „ 26·206 „ 66·0 „ 42·0 „ 66·0	
Lower Station—Barometer 29·940	Upper Station 26·206
Index error + 0·052	0·000
Capillary action + 0·063	+ 0·063
Capacity of cistern + 0·013	— 0·045
Reduction of mer- cury to temp. 32°} — 0·111	— 0·075
True height of the columns } of mercury at 32° Fahr. }	29·957
	26·149
By Mr. Baily's method, the height is	3873·7 English feet.
By Mr. Daniell's method	3845·9 „

Barometrical Measurement of the Depth of the Crater of Kiraueah, in Owhyhee, February 4th, 1834.

As no simultaneous observations were made, the barometer was read off, before starting, and on the return, at the top of the crater, as follows:—

At 8 ^h 26 ^m A.M.	At 4 ^h 07 ^m P.M.
Barometer 26·338 Merc. 62°	26·292 Merc. 69°
Capillary action + 0·063	+ 0·063
Capacity — 0·044	— 0·042
2·6357 Merc. 62°	26·313 Merc. 69°
Mean, 26·335; Merc. 65° 5'; Air, the same.	

At the lower station, in the crater, on the second ledge:—

At 10 ^h 52 ^m A.M.	At 0 ^h 00 ^m P.M.
Barometer 27·368 Merc. 77° 5'	27·358 Merc. 79°
Capillary action + 0·063	+ 0·063
Capacity — 0·027	— 0·027
27·404 Merc. 77° 5'	27·394 Merc. 79°
Mean, 27·399; Merc. 78° 25'; Air, the same.	

Computed by Mr. Baily's method, the difference in height of the two stations is 1096 English feet.

The barometer carried to the summits in the above observations was one made by Newman, under Captain Sabine's superintendence. Its capacity is $\frac{1}{85}$; capillary action, +063; and neutral point, 29.122. It was filled *in vacuo*, and boiled. The one on the sea-shore was filled (not *in vacuo*), and boiled by myself, and is of the same dimensions with the other. Its neutral point is also the same; but it has an index error of +052. Both appeared quite perfect, and the whole column of the one on the mountains was exposed, excepting about three inches near the neck. Not a speck of residual air could be seen in it even with the help of a lens; it appeared like a polished steel-bar.

I cannot omit the present occasion of speaking with the highest commendation of the repeating reflecting circle with which I measured most of my angles. Sea-faring men seem generally to dislike this instrument, and complain of its weight; but, for my part, this is rather a recommendation of it to me—it enables me to observe with far more steadiness. A little practice is perhaps necessary to use it with facility; but it is such a gratification to be able to bring all the operations within the power of one observer, that I think no one, who has overcome the first difficulties, will object to any remaining inconvenience.

III.—*Account of the Island and Province of Chiloe.* Extracted from the Remark Book kept on board H. M. S. Pylades, by Captain Blanckley, R.N. MS. 1834.

THE island and province of Chiloe is the southernmost of those which compose the state of *Chili*, and extends from latitude 40° 48' S., where, on the continent, it joins with the province of Valdivia, to latitude 43° 50' S., where the dependencies of the island known by the name of the *Archipelago* of Chiloe terminate, and which comprise a number of islands extending from latitude 41° 48' S. to latitude 43° 50' S. These islands are to the eastward of Chiloe, and between it and the coast of Patagonia. Out of sixty-three islands so situated, thirty-six are inhabited, which are enumerated in the annexed table of the different divisions which compose the province. The length of the island of Chiloe from north to south is about 120 miles; its greatest width, which is about the centre, is about 60 miles. The whole island is mountainous and covered with wood, chiefly a bastard cedar, but so durable, that it is exported in great quantities to Peru and Chili, where it is used in building, being, from its hardness, not liable to rot, and well adapted for beams and rafters. It is also used in building vessels in the island. In the interior, to the south-west and southward of the lagoon or inlet of Cucao, is situated a large